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CLAIMS

What is claimed is:

1. An isolated polynucleotide that encodes (1) a first polypeptide of at least 52 amino acids, the polypeptide having a sequence identity of at least 85% based on the Clustal method of alignment when compared to a second polypeptide selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, and 16, or (2) a third polypeptide of at least 100 amino acids, the polypeptide having a sequence identity of at least 85% based on the Clustal method of alignment when compared to a fourth polypeptide selected from the group consisting of SEQ ID NOs:18, 20, 22, 24, 26, 28, 30, and 32.

- 2. A polynucleotide sequence of Claim 1, wherein the sequence identity is at least 90%.
- 3. A polynucle tide sequence of Claim 1, wherein the sequence identity is at least 95%.
- 4. The polynucle tide of Claim 1 wherein the first is selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, and 14, and the third polypeptide is selected from the group consisting of SEQ ID NOs:16, 18, 20, 22, 24, 26, 28, 30, and 32.
- 5. The polynucleotide of Claim 1, wherein the polynucleotide comprises a nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, and 31.
- 6. The polynucleotide of Claim 1, wherein the first or third polypeptide is a biotin synthase.
 - 7. An isolated complement of the polynucleotide of Claim 1, wherein
 - (a) the complement and the polynucleotide consist of the same number of nucleotides and
 - (b) the nucleotide sequences of the complement and the polynucleotide have 100% complementarity.
 - 8. An isolated nucleic acid molecule that
 - (a) comprises at least 300 nucleotides and
 - (b) remains hybridized with the isolated polynucleotide of Claim 1 under a wash condition of 0.1X SSC, 0.1% SDS, and 65°C.
- Sub e 1 > 9. A cell comprising the polynucleotide of Claim 1.
 - 7 M. The cell of Claim wherein the cell is selected from the group consisting of a yeast cell, a bacterial cell and a plant cell.
 - A transgenic plant comprising the polynucleotide of Claim 1.
 - 35 A method for transforming a cell comprising introducing into a cell the polynucleotide of Claim 1.
 - A method for producing a transgenic plant, comprising



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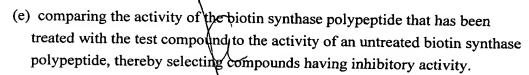
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- (a) transforming a plant cell with the polynucleotide of Claim 1, and
- (b) regenerating a plant from the transformed plant cell
- 14. A method for producing a nucleic acid molecule comprising
 - (a) selecting a polynucleotide of Claim 1, and
 - (b) synthesizing a nucleic acid molecule, containing the nucleotide sequence of the polynuclotide.
- 15. The method of Claim 14, wherein the nucleic acid molecule is produced in vivo.
- 16. An isolated polypeptide selected from the group consisting of (1) a first polypeptide of at least 52 amino acids, which has a sequence identity of at least 85% based on the Clustal method compared to an amino acid sequence selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, and 16; and (2) a second polypeptide of at least 100 amino acids, which has a sequence identity of at least 85% based on the Clustal method compared to an amino acid sequence selected from the group consisting of SEQ ID NOs:18, 20, 22, 24, 26, 28, 30, and 32.
 - 17. The polypeptide of Claim 16, wherein the sequence identity is at least 90%.
 - 18. The polypeptide of Chaim 16, wherein the sequence identity is at least 95%.
- 19. The polypeptide of Claim 16, wherein the polypeptide has a sequence selected from the group consisting of SEQID NOs:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, and 32.
 - 20. The polypeptide of Claim 16, wherein the polypeptide is a biotin synthase.
- 21. A chimeric gene comprising the polynucleotide of Claim 6 operably linked to at least one suitable regulatory sequence.
- 22. A method for altering the level of biotin synthase expression in a host cell, the method comprising:
 - (a) transforming a host cell with the chimeric gene of Claim 21; and
 - (b) growing the transformed cell in step (a) under conditions suitable for the expression of the chimeric gene.
- 23. A method for evaluating a compound for its ability to inhibit the activity of a biotin synthase, the method comprising:
 - (a) transforming a host cell with a chimeric gene of Claim 21,
 - (b) growing the transformed host cell under conditions suitable for expression of the chimeric gene wherein expression of the chimeric gene results in production of the biorin synthase;
 - (c) optionally purifying the biotin synthase polypeptide expressed by the transformed host cell.
 - (d) treating the biotin synthase polypeptide with a compound to be tested; and



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